#8

SEQUENCE LISTING

<110> Axxima Pharmaceuticals AG
Schubart, Daniel
Habenberger, Peter
Stein-Gerlach, Matthias
Bevec, Dorian

<120> Cellular Kinases Involved in Cytomegalovirus Infection and their Inhibition

<130> AXM-004.1 US

<140> 09/981,397
<141> 2001-10-16

<150> 60/240,750
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Leu His Ile His Thr Pro Leu Leu Asp Ser Glu Arg Lys Asp Val Leu
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Ile Leu Gly Ile Cys Asn Glu Pro Glu Phe Leu Gly Ile Val Thr Glu
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130 135 140

His Asp Leu Lys Thr Gln Asn Ile Leu Leu Asp Asn Glu Phe His Val
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Lys Ile Ala Asp Phe Gly Leu Ser Lys Trp Arg Met Met Ser Leu Ser
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Gln Ser Arg Ser Ser Lys Ser Ala Pro Glu Gly Gly Thr Ile Ile Tyr
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Met Pro Pro Glu Asn Tyr Glu Pro Gly Gln Lys Ser Arg Ala Ser Ile
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Ile His Leu Cys Asp Lys Lys Lys Met Glu Leu Ser Leu Asn Ile Pro
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Lys Gly Pro Asn Cys Ile Glu His Asn Glu Ala Leu Leu Glu Glu Ala
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Lys Met Met Asn Arg Leu Arg His Ser Arg Val Val Lys Leu Leu Gly
65 70 75 80

Val Ile Ile Glu Glu Gly Lys Tyr Ser Leu Val Met Glu Tyr Met Glu
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Lys Gly Asn Leu Met His Val Leu Lys Ala Glu Met Ser Thr Pro Leu
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Ser Val Lys Gly Arg Ile Ile Leu Glu Ile Ile Glu Gly Met Cys Tyr
115 120 125

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Leu Val Asp Asn Asp Phe His Ile Lys Ile Ala Asp Leu Gly Leu Ala
145 150 155 160

Ser Phe Lys Met Trp Ser Lys Leu Asn Asn Glu Glu His Asn Glu Leu
165 170 175

Arg Glu Val Asp Gly Thr Ala Lys Lys Asn Gly Gly Thr Leu Tyr Tyr
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Ser Asp Val Tyr Ser Phe Ala Val Val Leu Trp Ala Ile Phe Ala Asn
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Pro Arg Glu Ile Ile Ser Leu Met Lys Leu Cys Trp Glu Ala Asn Pro
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Ile Lys Tyr Thr Ile Tyr Asn Ser Thr Gly Ile Gln Ile Gly Ala Tyr
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Gln Ser Gln Ile Asp Glu Ile Asp His Asp Tyr Glu Arg Asp Gly Leu
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Lys Glu Lys Val Tyr Gln Met Leu Gln Lys Trp Val Met Arg Glu Gly
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Gly Gln Gln Lys Glu Leu Pro Lys Pro Lys Glu Lys Thr Pro Pro Leu
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Gly Lys Lys Gln Ser Ser Val Tyr Lys Leu Glu Ala Val Glu Lys Ser
35 40 45

Pro Val Phe Cys Gly Lys Trp Glu Ile Leu Asn Asp Val Ile Thr Lys
50 55 60

Gly Thr Ala Lys Glu Gly Ser Glu Ala Gly Pro Ala Ala Ile Ser Ile
65 70 75 80

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Ile Ala Gln Ala Glu Cys Glu Asn Ser Gln Glu Phe Ser Pro Thr Phe
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Ser Glu Arg Ile Phe Ile Ala Gly Ser Lys Gln Tyr Ser Gln Ser Glu
            100                 105                 110

Ser Leu Asp Gln Ile Pro Asn Asn Val Ala His Ala Thr Glu Gly Lys
        115                 120                 125

Met Ala Arg Val Cys Trp Lys Gly Lys Arg Arg Ser Lys Ala Arg Lys
    130                 135                 140

Lys Arg Lys Lys Lys Ser Ser Lys Ser Leu Ala His Ala Gly Val Ala
145                 150                 155                 160

Leu Ala Lys Pro Leu Pro Arg Thr Pro Glu Gln Glu Ser Cys Thr Ile
                165                 170                 175

Pro Val Gln Glu Asp Glu Ser Pro Leu Gly Ala Pro Tyr Val Arg Asn
            180                 185                 190

Thr Pro Gln Phe Thr Lys Pro Leu Lys Glu Pro Gly Leu Gly Gln Leu
        195                 200                 205

Cys Phe Lys Gln Leu Gly Glu Gly Leu Arg Pro Ala Leu Pro Arg Ser
    210                 215                 220

Glu Leu His Lys Leu Ile Ser Pro Leu Gln Cys Leu Asn His Val Trp
225                 230                 235                 240

Lys Leu His His Pro Gln Asp Gly Gly Pro Leu Pro Leu Pro Thr His
                245                 250                 255

Pro Phe Pro Tyr Ser Arg Leu Pro His Pro Phe Pro Phe His Pro Leu
            260                 265                 270

Gln Pro Trp Lys Pro His Pro Leu Glu Ser Phe Leu Gly Lys Leu Ala
        275                 280                 285

Cys Val Asp Ser Gln Lys Pro Leu Pro Asp Pro His Leu Ser Lys Leu
    290                 295                 300

Ala Cys Val Asp Ser Pro Lys Pro Leu Pro Gly Pro His Leu Glu Pro
305                 310                 315                 320
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Ser Cys Leu Ser Arg Gly Ala His Glu Lys Phe Ser Val Glu Glu Tyr
                325                 330                 335

Leu Val His Ala Leu Gln Gly Ser Val Ser Ser Ser Gln Ala His Ser
            340                 345                 350

Leu Thr Ser Leu Ala Lys Thr Trp Ala Ala Arg Gly Ser Arg Ser Arg
        355                 360                 365

Glu Pro Ser Pro Lys Thr Glu Asp Asn Glu Gly Val Leu Leu Thr Glu
    370                 375                 380

Lys Leu Lys Pro Val Asp Tyr Glu Tyr Arg Glu Glu Val His Trp Ala
385                 390                 395                 400

Thr His Gln Leu Arg Leu Gly Arg Gly Ser Phe Gly Glu Val His Arg
                405                 410                 415

Met Glu Asp Lys Gln Thr Gly Phe Gln Cys Ala Val Lys Lys Val Arg
            420                 425                 430

Leu Glu Val Phe Arg Ala Glu Glu Leu Met Ala Cys Ala Gly Leu Thr
        435                 440                 445

Ser Pro Arg Ile Val Pro Leu Tyr Gly Ala Val Arg Glu Gly Pro Trp
    450                 455                 460

Val Asn Ile Phe Met Glu Leu Leu Glu Gly Gly Ser Leu Gly Gln Leu
465                 470                 475                 480

Val Lys Glu Gln Gly Cys Leu Pro Glu Asp Arg Ala Leu Tyr Tyr Leu
                485                 490                 495

Gly Gln Ala Leu Glu Gly Leu Glu Tyr Leu His Ser Arg Arg Ile Leu
            500                 505                 510

His Gly Asp Val Lys Ala Asp Asn Val Leu Leu Ser Ser Asp Gly Ser
        515                 520                 525

His Ala Ala Leu Cys Asp Phe Gly His Ala Val Cys Leu Gln Pro Asp
    530                 535                 540

Gly Leu Gly Lys Ser Leu Leu Thr Gly Asp Tyr Ile Pro Gly Thr Glu
545                 550                 555                 560
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Thr His Met Ala Pro Glu Val Val Leu Gly Arg Ser Cys Asp Ala Lys
                565                 570                 575

Val Asp Val Trp Ser Ser Cys Cys Met Met Leu His Met Leu Asn Gly
            580                 585                 590

Cys His Pro Trp Thr Gln Phe Phe Arg Gly Pro Leu Cys Leu Lys Ile
        595                 600                 605

Ala Ser Glu Pro Pro Pro Val Arg Glu Ile Pro Pro Ser Cys Ala Pro
    610                 615                 620

Leu Thr Ala Gln Ala Ile Gln Glu Gly Leu Arg Lys Glu Pro Ile His
625                 630                 635                 640

Arg Val Ser Ala Ala Glu Leu Gly Gly Lys Val Asn Arg Ala Leu Gln
                645                 650                 655

Gln Val Gly Gly Leu Lys Ser Pro Trp Arg Gly Glu Tyr Lys Glu Pro
            660                 665                 670

Arg His Pro Pro Pro Asn Gln Ala Asn Tyr His Gln Thr Leu His Ala
        675                 680                 685

Gln Pro Arg Glu Leu Ser Pro Arg Ala Pro Gly Pro Arg Pro Ala Glu
    690                 695                 700

Glu Thr Thr Gly Arg Ala Pro Lys Leu Gln Pro Pro Leu Pro Pro Glu
705                 710                 715                 720

Pro Pro Glu Pro Asn Lys Ser Pro Pro Leu Thr Leu Ser Lys Glu Glu
                725                 730                 735

Ser Gly Met Trp Glu Pro Leu Pro Leu Ser Ser Leu Glu Pro Ala Pro
            740                 745                 750

Ala Arg Asn Pro Ser Ser Pro Glu Arg Lys Ala Thr Val Pro Glu Gln
        755                 760                 765

Glu Leu Gln Gln Leu Glu Ile Glu Leu Phe Leu Asn Ser Leu Ser Gln
    770                 775                 780

Pro Phe Ser Leu Glu Glu Gln Glu Gln Ile Leu Ser Cys Leu Ser Ile
785                 790                 795                 800
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Asp Ser Leu Ser Leu Ser Asp Asp Ser Glu Lys Asn Pro Ser Lys Ala
805 810 815

Ser Gln Ser Ser Arg Asp Thr Leu Ser Ser Gly Val His Ser Trp Ser
820 825 830

Ser Gln Ala Glu Ala Arg Ser Ser Ser Trp Asn Met Val Leu Ala Arg
835 840 845

Gly Arg Pro Thr Asp Thr Pro Ser Tyr Phe Asn Gly Val Lys Val Gln
850 855 860

Ile Gln Ser Leu Asn Gly Glu His Leu His Ile Arg Glu Phe His Arg
865 870 875 880

Val Lys Val Gly Asp Ile Ala Thr Gly Ile Ser Ser Gln Ile Pro Ala
885 890 895

Ala Ala Phe Ser Leu Val Thr Lys Asp Gly Gln Pro Val Arg Tyr Asp
900 905 910

Met Glu Val Pro Asp Ser Gly Ile Asp Leu Gln Cys Thr Leu Ala Pro
915 920 925

Asp Gly Ser Phe Ala Trp Ser Trp Arg Val Lys His Gly Gln Leu Glu
930 935 940

Asn Arg Pro
945

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<211> 2030
<212> DNA
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<400> 19
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gcgaggagcg tggtccccac ccatccagcc catatgtgca agtgcccttg acagagaggc 180

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<211> 318
<212> PRT
<213> Homo sapiens

<400> 20

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Ser Arg Thr Phe Ile Thr Ile Gly Asp Arg Asn Phe Glu Val Glu Ala
20 25 30

Asp Asp Leu Val Thr Ile Ser Glu Leu Gly Arg Gly Ala Tyr Gly Val
35 40 45

Val Glu Lys Val Arg His Ala Gln Ser Gly Thr Ile Met Ala Val Lys
50 55 60

Arg Ile Arg Ala Thr Val Asn Ser Gln Glu Gln Lys Arg Leu Leu Met
65 70 75 80

Asp Leu Asp Ile Asn Met Arg Thr Val Asp Cys Phe Tyr Thr Val Thr
85 90 95

Phe Tyr Gly Ala Leu Phe Arg Glu Gly Asp Val Trp Ile Cys Met Glu
100 105 110

Leu Met Asp Thr Ser Leu Asp Lys Phe Tyr Arg Lys Val Leu Asp Lys
115 120 125

Asn Met Thr Ile Pro Glu Asp Ile Leu Gly Glu Ile Ala Val Ser Ile
130 135 140

Val Arg Ala Leu Glu His Leu His Ser Lys Leu Ser Val Ile His Arg
145 150 155 160

Asp Val Lys Pro Ser Asn Val Leu Ile Asn Lys Glu Gly His Val Lys
165 170 175

Met Cys Asp Phe Gly Ile Ser Gly Tyr Leu Val Asp Ser Val Ala Lys
180 185 190

Thr Met Asp Ala Gly Cys Lys Pro Tyr Met Ala Pro Glu Arg Ile Asn
195 200 205

Pro Glu Leu Asn Gln Lys Gly Tyr Asn Val Lys Ser Asp Val Trp Ser
210 215 220

Leu Gly Ile Thr Met Ile Glu Met Ala Ile Leu Arg Phe Pro Tyr Glu

225 230 235 240

Ser Trp Gly Thr Pro Phe Gln Gln Leu Lys Gln Val Val Glu Glu Pro
245 250 255

Ser Pro Gln Leu Pro Ala Asp Arg Phe Ser Pro Glu Phe Val Asp Phe
260 265 270

Thr Ala Gln Cys Leu Arg Lys Asn Pro Ala Glu Arg Met Ser Tyr Leu
275 280 285

Glu Leu Met Glu His Pro Phe Phe Thr Leu His Lys Thr Lys Lys Thr
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Asp Ile Ala Ala Phe Val Lys Lys Ile Leu Gly Glu Asp Ser
305 310 315

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aaaaaaaaaa aaaaaaaatt cctgc 3745

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<211> 686
<212> PRT
<213> Homo sapiens

<400> 22

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Gln Gln Lys Ala Pro Leu Val Pro Pro Pro Pro Pro Pro Pro Pro Pro
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Pro Pro Pro Pro Leu Pro Asp Pro Thr Pro Pro Glu Pro Glu Glu Glu
35 40 45

Ile Leu Gly Ser Asp Asp Glu Glu Gln Glu Asp Pro Ala Asp Tyr Cys
50 55 60

Lys Gly Gly Tyr His Pro Val Lys Ile Gly Asp Leu Phe Asn Gly Arg

65 70 75 80

Tyr His Val Ile Arg Lys Leu Gly Trp Gly His Phe Ser Thr Val Trp
85 90 95

Leu Cys Trp Asp Met Gln Gly Lys Arg Phe Val Ala Met Lys Val Val
100 105 110

Lys Ser Ala Gln His Tyr Thr Glu Thr Ala Leu Asp Glu Ile Lys Leu
115 120 125

Leu Lys Cys Val Arg Glu Ser Asp Pro Ser Asp Pro Asn Lys Asp Met
130 135 140

Val Val Gln Leu Ile Asp Asp Phe Lys Ile Ser Gly Met Asn Gly Ile
145 150 155 160

His Val Cys Met Val Phe Glu Val Leu Gly His His Leu Leu Lys Trp
165 170 175

Ile Ile Lys Ser Asn Tyr Gln Gly Leu Pro Val Arg Cys Val Lys Ser
180 185 190

Ile Ile Arg Gln Val Leu Gln Gly Leu Asp Tyr Leu His Ser Lys Cys
195 200 205

Lys Ile Ile His Thr Asp Ile Lys Pro Glu Asn Ile Leu Met Cys Val
210 215 220

Asp Asp Ala Tyr Val Arg Arg Met Ala Ala Glu Pro Glu Trp Gln Lys
225 230 235 240

Ala Gly Ala Pro Pro Pro Ser Gly Ser Ala Val Ser Thr Ala Pro Gln
245 250 255

Gln Lys Pro Ile Gly Lys Ile Ser Lys Asn Lys Lys Lys Lys Leu Lys
260 265 270

Lys Lys Gln Lys Arg Gln Ala Glu Leu Leu Glu Lys Arg Leu Gln Glu
275 280 285

Ile Glu Glu Leu Glu Arg Glu Ala Glu Arg Lys Ile Ile Glu Glu Asn
290 295 300

Ile Thr Ser Ala Ala Pro Ser Asn Asp Gln Asp Gly Glu Tyr Cys Pro

305 310 315 320

Glu Val Lys Leu Lys Thr Thr Gly Leu Glu Glu Ala Ala Glu Ala Glu
325 330 335

Thr Ala Lys Asp Asn Gly Glu Ala Glu Asp Gln Glu Glu Lys Glu Asp
340 345 350

Ala Glu Lys Glu Asn Ile Glu Lys Asp Glu Asp Asp Val Asp Gln Glu
355 360 365

Leu Ala Asn Ile Asp Pro Thr Trp Ile Glu Ser Pro Lys Thr Asn Gly
370 375 380

His Ile Glu Asn Gly Pro Phe Ser Leu Glu Gln Gln Leu Asp Asp Glu
385 390 395 400

Asp Asp Asp Glu Glu Asp Cys Pro Asn Pro Glu Glu Tyr Asn Leu Asp
405 410 415

Glu Pro Asn Ala Glu Ser Asp Tyr Thr Tyr Ser Ser Ser Tyr Glu Gln
420 425 430

Phe Asn Gly Glu Leu Pro Asn Gly Arg His Lys Ile Pro Glu Ser Gln
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Phe Pro Glu Phe Ser Thr Ser Leu Phe Ser Gly Ser Leu Glu Pro Val
450 455 460

Ala Cys Gly Ser Val Leu Ser Glu Gly Ser Pro Leu Thr Glu Gln Glu
465 470 475 480

Glu Ser Ser Pro Ser His Asp Arg Ser Arg Thr Val Ser Ala Ser Ser
485 490 495

Thr Gly Asp Leu Pro Lys Ala Lys Thr Arg Ala Ala Asp Leu Leu Val
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Asn Pro Leu Asp Pro Arg Asn Arg Asp Lys Ile Arg Val Lys Ile Ala
515 520 525

Asp Leu Gly Asn Ala Cys Trp Val His Lys His Phe Thr Glu Asp Ile
530 535 540

Gln Thr Arg Gln Tyr Arg Ser Ile Glu Val Leu Ile Gly Ala Gly Tyr

545 550 555 560

Ser Thr Pro Ala Asp Ile Trp Ser Thr Ala Cys Met Ala Phe Glu Leu
565 570 575

Ala Thr Gly Asp Tyr Leu Phe Glu Pro His Ser Gly Glu Asp Tyr Ser
580 585 590

Arg Asp Glu Asp His Ile Ala His Ile Ile Glu Leu Leu Gly Ser Ile
595 600 605

Pro Arg His Phe Ala Leu Ser Gly Lys Tyr Ser Arg Glu Phe Phe Asn
610 615 620

Arg Arg Gly Glu Leu Arg His Ile Thr Lys Leu Lys Pro Trp Ser Leu
625 630 635 640

Phe Asp Val Leu Val Glu Lys Tyr Gly Trp Pro His Glu Asp Ala Ala
645 650 655

Gln Phe Thr Asp Phe Leu Ile Pro Met Leu Glu Met Val Pro Glu Lys
660 665 670

Arg Ala Ser Ala Gly Glu Cys Arg His Pro Trp Leu Asn Ser
675 680 685